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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/733,724	12/11/2003	Noriaki Sakamoto	14225-033001 / F1030575US	9731
26211 7590 11/01/2007 FISH & RICHARDSON P.C. P.O. BOX 1022 MINNEAPOLIS, MN 55440-1022			EXAMINER ANDUJAR, LEONARDO	
			ART UNIT 2826	PAPER NUMBER
			MAIL DATE 11/01/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/733,724

Applicant(s)

SAKAMOTO, NORIAKI

Examiner

Leonardo Andújar

Art Unit

2826

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 7/17/2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) 8-18 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7 and 19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 7/17/2007 has been entered.

Election/Restrictions

2. Applicant's election without traverse of Group I (claims 1-7) in the reply filed on 04/17/2006 is acknowledged.

Priority

3. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

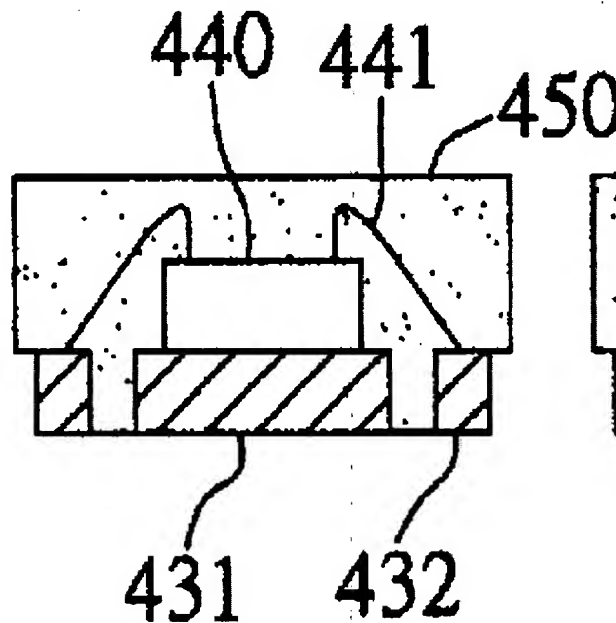
A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1, 3, 4 and 19 are rejected under 35 U.S.C. 102(b) as being anticipated by Wu (US 6,281,047).

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6. Regarding claim 1, Wu (e.g. 4C) shows a circuit device comprising: a conductive pattern 431/432; a circuit element 440, affixed onto the conductive pattern; and an insulating resin 450, sealing the conductive pattern and the circuit element while exposing at least a bottom surface of the conductive pattern; wherein recessed areas are in side surfaces of the insulating resin such that outwardly facing outer peripheral parts of the conductive pattern are exposed from within the recessed areas, and wherein the top surface of the circuit device consists of insulating resin.



7. Regarding claim 3, Wu teaches that the circuit element is a semiconductor element and the conductive pattern that is disposed at the peripheral part and the semiconductor element are electrically connected.

8. Regarding claim 4, Wu teaches that the conductive pattern comprises die pad 431 and bonding pad 432 and the circuit element is mounted on the die pad and the bonding pads are disposed so as to surround the die pad.

9. Regarding claim 19, Wu teaches that the circuit device is of a substantially hexahedron shape.

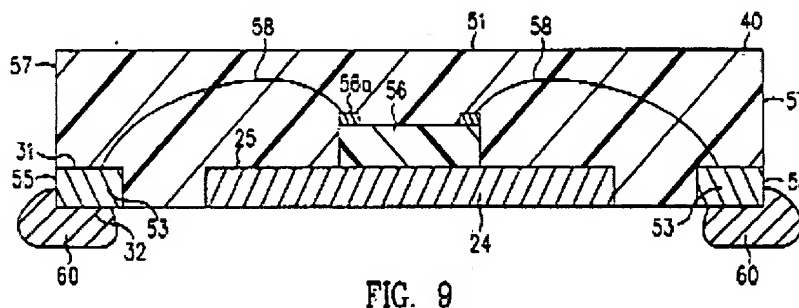
Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claims 2 and 6 rejected under 35 U.S.C. 103(a) as being unpatentable over by Wu (US 6,281,047) view of Glenn (US 6,143,981).

12. Regarding claim 2, Wu teaches most aspects of the invention except for a circuit device mounted by attaching brazing material to the exposed side surfaces and bottom surface of the conductive pattern. However, Glenn (e.g. fig. 9) shows a circuit device mounted by attaching brazing material 60 to the exposed side surfaces and bottom surface of a conductive pattern 53.



It would have been obvious to one having ordinary skills in the art to use a brazing material to attach the circuit device disclosed by Wu to a printed circuit board by soldering a brazing material to the bottom and side surfaces as suggested by Glenn in

order to secure the device to the substrate, provide reliable electrical connections and a heat pathway.

13. Regarding claim 6, Wu teaches a covering resin is formed on the surface of the conductive pattern and the circuit element and the conductive pattern can be electrically connected via an opening provided in the covering resin (side surface of the pattern) but does not show the electrical connection. Glenn (e.g. fig. 9) shows a circuit device mounted by attaching brazing material 60 to exposed side and bottom surfaces of a conductive pattern 53. It would have been obvious to one having ordinary skills in the art to use a brazing material to attach the circuit device disclosed by Wu to a printed circuit board by soldering a brazing material to the bottom and side surfaces as suggested by Glenn in order to secure the device to the substrate, provide reliable electrical connections and a heat pathway.

14. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over by Wu (US 6,281,047) view of Jung et al. (US 2002/0056926).

15. Regarding claim 5, Wu shows most aspects of the instant invention except for plating on the rear surface and side surfaces of the conductive patterns that is exposed from the insulating resin. Nevertheless, Jung (e.g. fig. 2) shows a plating 250/254 can be provided on the exposed surfaces of the pads including the rear surface and side surface to protect them from contamination or corrosion (e.g. pp 00017 & 0034). It would have been obvious to one having ordinary skill in the art at the time the invention was made to make the invention disclosed by Wu including a

plating on the rear surface and side surface of the conductive pattern that is exposed to prevent the pads from corrosion or contamination as taught by Jung.

16. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wu (US 6,281,047) in view of Glenn (US 6,143,981) further in view of Koon et al. (US 6,836,009).

17. Regarding claim 6, Wu in view of Glenn shows most aspects of the instant invention including a covering resin but does not teach that the covering resin or encapsulant is made of a photosensitive material. Nevertheless, Koon teaches that photosensitive resins can be used to encapsulate devices (col. 10/lls. 65-66). It would have been obvious to one having ordinary skill in the art at the time the invention was made to use a photosensitive resin material as encapsulant in the device disclosed by Wu in view of Glenn as suggested by Koon since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice (i.e. a standardized process can be used thus reducing the manufacturing cost). *In re Leshin*, 125 USPQ 416.

Response to Arguments

18. Applicant's arguments with respect to claims 1-7 have been considered but are moot in view of the new ground(s) of rejection.

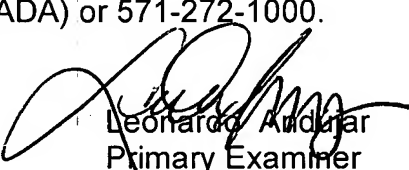
Conclusion

19. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Fogelson shows devices similar to the instant invention.

20. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leonardo Andújar whose telephone number is 571-272-1912. The examiner can normally be reached on Mon through Thu from 9:00 AM to 7:30 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sue Purvis can be reached on 571-272-1236. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Leonardo Andújar
Primary Examiner
Art Unit 2826

10/24/2007